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With all these defects the book is hardly one to be recommended to the young student. It would almost be better for him to hunt up the time-honored 'Grundriss.'

J. P. McM.

SOCIETIES AND ACADEMIES.

THE AMERICAN POMOLOGICAL SOCIETY.

THE American Pomological Society held its twenty-eighth biennial meeting at Boston on September 10, 11 and 12. Among the papers on the program were, in addition to the address of the president, Professor Charles Watrous, of Des Moines, Ia., the following:

DR. L. H. BAILEY, Cornell University, Ithaca, N. Y.: 'The Attitude of the Schools to Country Life.'

MR. J. HORACE MCFARLAND, Harrisburg, Pa.: 'Fruit Gardens, what they are and what they are for.'

PROFESSOR S. B. GREEN, St. Anthony Falls, Minnesota: 'Hardy Fruit Gardens.'

PROFESSOR E. J. WICKSON, University of California, Berkeley, Cal.: 'Fruit Gardens of the Pacific Coast.'

MR. G. HAROLD POWELL, pomologist in charge fruit storage investigations, U. S. Department of Agriculture: 'Relation of Cold Storage to Commercial Orchardling.'

DR. C. L. MARLATT, first assistant entomologist, U. S. Department of Agriculture: 'The San Jose Scale in the Orient.' (Illustrated.)

HON. W. A. MCKINNON, chief of Fruit Division, Department of Agriculture, Ottawa, Canada: 'Fruit Inspection and the Export Trade.'

MR. GEO. T. POWELL, Ghent, N. Y.: 'Should the Commercial Grower Plant Varieties of High Quality?'

DR. W. D. BIGELOW, acting chief, Bureau of Chemistry, U. S. Department of Agriculture: 'Pure Food Legislation and its Relation to the Fruit Grower.'

PROFESSOR F. W. TAYLOR, chief, Department of Horticulture, St. Louis, Mo.: 'Pomology at the St. Louis World's Fair.'

DISCUSSION AND CORRESPONDENCE.

THE BAHAMAS VS. TORTUGAS AS A STATION FOR RESEARCH IN MARINE ZOOLOGY.

FROM June 4 to July 27 the writer was in charge of an expedition of the Museum of the Brooklyn Institute of Arts and Sciences which

had for its object the study of the coral reefs and marine zoology of the Bahamas. The writer had already enjoyed the privilege of studying the marine zoology of the Bahamas during the winter months while acting as assistant to Dr. Alexander Agassiz upon the *Wild Duck* expedition of 1892-93.

Having now seen the conditions in the Bahamas in summer as well as in winter, the writer feels justified in drawing a comparison between this region and that of the Tortugas in reference to their comparative advantages as stations for the establishment of a laboratory for research in marine zoology.

Nassau, the capital of the Bahamas, is a clean, healthful city attractively situated upon hills of *æolian* rock and possessed of a good harbor.

The social conditions commonly found in English colonies are here well developed, and one meets with gracious treatment both from the government officials and from the residents of the islands. It is certain that were a laboratory for research in marine biology to be established in the Bahamas, under good auspices, the community would extend a cordial welcome to the investigators and render their sojourn in the colony pleasant in every way.

The harbor of Nassau is a long, narrow trough bordered on the south by the island of New Providence and on the north by Hog and Rose islands. A very strong tidal current sets through it, flowing eastward with the flood and westward with the ebb-tide, the current being of such strength that it is necessary only to anchor in the tide-way and throw over a tow-net in order to make a surface haul under ideal conditions. This is an advantage possessed by but few localities and would enable a laboratory to supply itself with a practically continuous surface haul.

Unfortunately, however, the surface hauls are very poor in comparison with those from the Tortugas. The prevailing winds in the Bahamas during the summer are from an easterly direction, and these drive the surface water into Nassau harbor from over the shallow flats which extend for about seventy-five miles between New Providence and Eleuthera

island. In common with most of the Bahama banks these shallow flats are veritable submarine deserts. Here and there one finds a small cluster of coral heads and gorgonians, but almost everywhere the bottom is a flat barren waste of sand supporting a sparse growth of coralline algæ. Not only is the bottom deficient in living forms, but the pelagic life in the water over these flats is poor to an even more marked degree both in number and variety of forms. This water is more or less charged with a flocculent mass of finely divided mud similar to that commonly met with off the mainland coast of Florida, and evidently churned up by the currents caused by winds and tides. This floating material clings readily to pelagic animals and plants and appears to be rapidly fatal to the majority of pelagic creatures. Among medusæ only a few species allied to *Gonionemus* appear to thrive in this water of the Bahama banks.

Almost no Sagittæ or Salpæ and remarkably few Crustacea or Medusæ are found in the water of the shallow banks, whereas these forms are abundant over the Tongue of the Ocean where the depth varies from 500 to 1,000 fathoms, and to the northward of New Providence Island in water 1,500 to 2,000 fathoms deep. Indeed, whenever the wind becomes reversed and comes from a westerly direction the pelagic hauls in Nassau harbor become rich in truly oceanic forms which have evidently drifted in from the Tongue of the Ocean.

An idea of the relative poverty of the pelagic fauna of the Bahamas as compared with that of the Tortugas will become apparent from the fact that the most assiduous efforts in surface hauls at the Bahamas brought to light only 43 species of medusæ, while 90 species were found by the writer at the Tortugas. The writer once drew a large surface net for three miles through the most promising looking 'slick' over the bank without capturing a single marine animal.

The coral reefs of the Bahamas are richer than those of the Tortugas where the corals were largely killed twenty-four years ago by

a sudden influx of 'poisoned' water apparently from the mainland of Florida.

A wonderful reef, rich especially in *Madrepora*, *Agaricia*, *Dendrogyra* and Gorgonians stretches along almost the entire eastern shore of Andros Island. At New Providence Island also one finds a remarkable reef abounding in *Porites*, *Mæandrina*, *Madrepora palmata* and Gorgonians off Clifton Point, while another cluster especially rich in *Mæandrina* and *Orbicella* lies off the eastern point of New Providence. There are also good reefs within Nassau harbor, and, indeed, the expedition met with remarkable success in its collection of corals, obtaining some of the largest and most perfect stocks ever taken from the West Indian region.

In comparison with that of the Tortugas reefs the fish fauna of the Bahamas is markedly poor. It is evident also that the invertebrates are not so abundant among the Bahamas corals as they are among those of the Tortugas. This, however, does not apply to the Actinians, which are more numerous in both number and variety than at the Tortugas.

The Bahama region is richer in corals, poorer in fishes and invertebrates, and far poorer in pelagic life than that of the Tortugas. Indeed, as Bigelow aptly states, the Bahamas lie upon the wrong side of the Gulf Stream. In this respect the situation of the Tortugas is almost ideal, for they are surrounded by the purest of ocean water, and the prevailing winds, both in summer and winter, drift upon their shores the rich pelagic life of the Gulf Stream.

It is true that the Tortugas afford practically no opportunity for the study of land fauna or flora, but there is no place known to the writer in the American Tropics where both land and marine faunæ are exceptionally rich. For the study of marine life we must seek the borders of the Gulf Stream.

In considering the question of the establishment of a laboratory for research in marine zoology we must, I think, confine ourselves to the problem of the study of the ocean and leave that of the study of the land fauna to

another laboratory especially designed for such a purpose.

In recent discussions in *SCIENCE* it is apparent that some of the correspondents were ignorant of the conditions which have prevailed since 1898 at the Tortugas.

The station is now a naval coaling base and a large and comfortable tug makes regular trips twice a week to and fro between the Tortugas and Key West, leaving at 8 A.M. and arriving at about 2 P.M. Even during the writer's earliest visits to the region it was never necessary to charter a vessel in order to proceed from Key West to the Tortugas, as has been implied by one of the correspondents.

The climate of the Tortugas is cooler than that of the Bahamas, owing to their smaller land mass and the refreshing influence of the ocean breeze. In both Bahamas and Tortugas the breezes throughout the months of May to August are usually so gentle that one may make studies of the windward sides of the reefs on almost any day, using very small rowboats. The yellow fever quarantine station was abolished at the Tortugas in 1899, and there are practically no mosquitoes on Loggerhead or Bird Keys.

Although the community at the Tortugas is small the social conditions are pleasant, for people of culture and education are sure to be found among the naval officers and their families, and indeed, the writer recalls with keen pleasure many most enjoyable hours spent in company with one of the keepers of the lighthouse. The community is sufficiently small not to distract, but yet large enough to render pleasant and profitable the few leisure hours which may be enjoyed by one engaged in marine research. The Tortugas is in telegraphic connection with Key West, and a naval surgeon is stationed at Fort Jefferson.

ALFRED GOLDSBOROUGH MAYER.

SHORTER ARTICLES.

THE BRAIN-WEIGHT OF THE JAPANESE.

INVESTIGATIONS concerning the weight of the brain in the non-European races have hitherto been exceedingly limited. All that was known

of the brain-weight of the Japanese was confined to a few statistics reported by Doenitz* (1874), Taguchi† (1881) and Suzuki‡ (1892), comprising in all 130 brains. These were nearly all of persons who were decapitated in the time of the 'Meiji.' The average brain-weight of 100 males was found by Taguchi to be 1,356 gms.; while Doenitz gives 1,337 gms. for 10 male subjects. Professor K. Taguchi,§

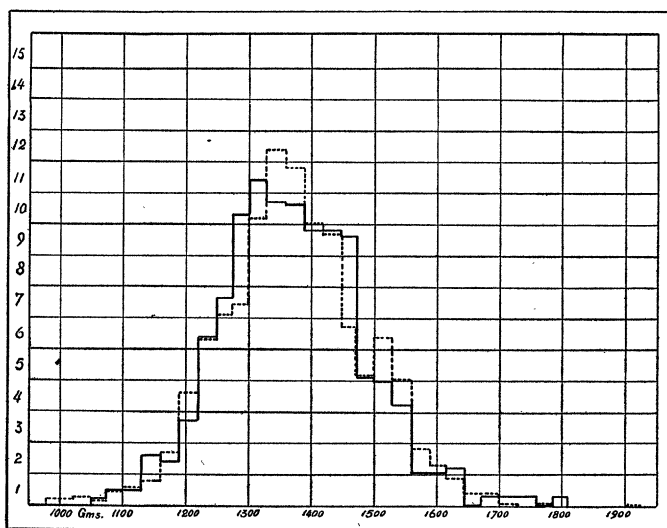


FIG. 1. Chart showing distribution of 374 male Japanese brain-weights (continuous line) as compared with 1,012 German brain-weights (broken line) of the Bischoff-Marchand series. For convenience in comparison, both series are tabulated on a basis of 100 cases each.

of Tokyo University, recognizing the need of fuller statistics, began ten years ago to record systematically brain-weights together with data concerning stature, age and body-weight. His researches are based upon 597 subjects; 421 males and 176 females, mostly from the hospitals. The average brain-weight of 374

* Doenitz, 'Mitth. d. deutsch. Gesellsch. f. Natur. u. Völkerk. de Ostasiens,' Yokohama, 1874.

† 'Kaiboranyo,' Vol., 1881, p. 18.

‡ *Tokyo Medical Gazette*, VI., 1892, p. 518.

§ K. Taguchi, 'On the Weight of the Encephalon of the Japanese,' *Sei-I-Kwai Medical Journal*, Tokyo, Vol. XXII., Nos. 1, 2 and 3, 1903. Also in *Neurologia*, Vol. I., No. 5, 1903.